

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

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AMERICAN AIRLINES, INC.—DALLAS TEX —NOVEMBER 29, 1949

The Accident

American Airlines' Flight 157, of November 28, 1949, a DC-6, N 90728, crashed and burned following an attempted landing at Love Field, Dallas, Tex., on November 29, 1949, about 0549¹ of 46 occupants, 28 received fatal injuries. Survivors included 15 passengers, the captain, the first officer and the flight engineer.

History of the Flight

Flight 157 originated at LaGuardia Field, New York, for Mexico City, Mexico, with stops scheduled at Washington, D C., and Dallas, Tex. Departure from LaGuardia was at 2147, November 28. Between LaGuardia and Washington the flight was reported to be uneventful with all of the aircraft's components functioning normally.

At Washington, a flight plan was filed with, and approved by, Airway Route Traffic Control. It specified Instrument Flight Rules to Dallas, with Wichita Falls, Tex., as the alternate, a cruising altitude of 18,000 feet, and a flight time of 5 hours and 4 minutes. The gross weight of the aircraft at takeoff was 82,295 pounds, which was 3,577 pounds less than the maximum allowable gross weight of 85,875 pounds, and the disposable load was distributed so that the center of gravity was within prescribed limits.

At 0206 the flight requested and received permission to change its flight plan to Visual Flight Rules. A position report was made over Nashville at 16,000 feet at 0254 and a descent was started to 6,000 feet. When approaching Nashville, No 1 engine had started backfiring at intervals of about 20 seconds. Various corrective measures, including the application of alcohol and carburetor heat,

and the richening of fuel mixture, were applied but were not successful and the backfiring continued. The captain and the flight engineer discussed the malfunctioning following which No 1 engine was feathered at a point about 25 miles southwest of Nashville at approximately 0300, however, the feathering was not reported to the company until 0429, when the flight was in the vicinity of Altheimer, Ark., a routine position reporting point about 125 miles beyond Memphis. At that time, the crew advised a change of aircraft on arrival at Dallas.

When 15 miles northeast of Dallas, at 0536, the flight was given permission to enter the traffic pattern at Love Field, Dallas, with a right-hand turn and instructed to land on Runway 36. The altimeter setting of 29.83 inches and the weather, which included unlimited ceiling, a visibility of 15 miles and a north-northeast wind of 5 mph, were given the flight. The captain and the flight engineer conferred regarding returning No 1 engine to service and decided against doing so. The crew then went through the pre-landing check. The landing lights were turned on and the flaps were lowered to the 20 degree position.

The flight turned right to final approach when approximately over the Range Station which is 2.2 miles south of the approach end of Runway 36. At this time its altitude was estimated to be 1200 feet AFL² by the captain and 800 feet AFL by the first officer. At a distance of about 1 1/2 miles from the approach end of the runway, the landing gear was extended. Shortly thereafter the flaps were extended fully.

The turn to final placed the aircraft to the left of the runway. Accordingly an "S" turn was made to correct the misalignment. During this "S" turn the aircraft skidded to its left, the air speed

¹ All times referred to herein are Central Standard and based on the 24-hour clock.

² Above field level

dropped abruptly and the aircraft settled rapidly. At this point the captain increased power to engines Nos. 2, 3 and 4 in an attempt to maintain control. Control tower operators watching the approach estimated that the aircraft cleared by 75 to 100 feet obstruction lights mounted on 30-foot poles on a power line located 800 feet south of the approach end of the runway.

The aircraft continued in a generally northwest direction, across the airport on a heading about 40 degrees to the left of Runway 36, in a tail low attitude. Its air speed continued to fall, its attitude became increasingly nose-high, and a stall developed just prior to striking a hangar and other buildings on the northwest side of the airport. Fire followed at once. Emergency procedures were put into effect resulting in fire, medical and police aid arriving within a few minutes.

Investigation

On final approach and when approximately at the proper altitude to start flaring out, the flight engineer saw a warning light flicker and the fuel flow meter of No. 4 engine reading zero. He immediately notified the pilots that No. 4 engine was cutting out, and the captain told him to put the booster pump to it. The flight engineer did so. Full throttle was then quickly applied to engines Nos. 2, 3 and 4. The captain stated that No. 4 engine came in with a "terrific" surge of power (overspeeding), the left wing dropped and the aircraft started to turn to the left. He then retarded throttles Nos. 3 and 4 in an attempt to raise the left wing with No. 2 engine. When the wing was partially up he opened throttles Nos. 3 and 4 and called for gear and flaps up. The first officer raised the gear but did not raise the flaps. He then observed that No. 4 tachometer indicated only 1200 rpm, noted that the fuel pressure to that engine was zero, and immediately feathered No. 4 propeller. The flight engineer turned on the cross-feed fuel valves. At this time the first officer radioed the tower to the effect that a crash was imminent.

Investigation revealed that the aircraft's first contact was with the top of the wall of hangar No. 7. The left wing struck at a point about 5 feet inboard from the attachment between its outer and

center panels. This contact was made while the aircraft was about 18 degrees nose-high in relation to the ground and with the left wing down approximately 34 degrees. At about the same time, the left stabilizer struck two crated aircraft engines that were standing in front of hangar 7. These crates were approximately 5 feet high.

Following this initial contact the aircraft continued ahead swerving to its left. The nose went down, No. 1 engine struck the ground and tore loose, and the aircraft passed through telephone and power lines as it crossed Love Field Drive, bordering the airport. Just beyond Love Field Drive the aircraft struck the ground while approximately level laterally and nose-down about 25 degrees. This contact broke off the entire cockpit and No. 2 engine. The remaining portion of the aircraft slid with its right wing tip foremost until the fuselage struck the side of another building. This final impact partially tore off Nos. 3 and 4 engines and the entire tail assembly and the aircraft came to rest with its fuselage on a heading of approximately 210 degrees. The distance from the approach end of Runway 36 to the impact site is approximately 3/4 of a mile, an estimated 22 seconds was required to traverse this distance.

The subject aircraft had eight fuel tanks, designated as No. 1 main, No. 1 alternate, No. 2 main, No. 2 alternate, etc. Each pair of main and alternate tanks normally feed their corresponding engine, although not simultaneously. However, a system of control valves allows fuel to be used from any or all tanks by any or all engines.

Upon departure from Washington the fuel totaled 2,696 gallons distributed among the eight tanks in this manner:

No. 1 Main.....	360 gallons
No. 1 Alternate..	260 gallons
No. 2 Main. ...	508 gallons
No. 2 Alternate.	220 gallons
No. 3 Main... ..	508 gallons
No. 3 Alternate	220 gallons
No. 4 Main.. ...	360 gallons
No. 4 Alternate .	260 gallons

In accordance with Company procedure, the flight engineer controlled the fuel under supervision of the captain. Tank selection was made in accordance with an